DOCUMENT RESUME

ED 187 280 HE 012 756

TITLE Requirements for the Ph.D. A Policy Statement.
INSTITUTION Council of Graduate Schools in the U.S., Washington, D.C.
PUB DATE Apr 79
NOTE 20p.
AVAILABLE FROM Council of Graduate Schools in the United States, One Dupont Circle, Washington, DC 20036.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Academic Standards; Administrator Guides; Credentials; Curriculum Design; *Degree Requirements; *Doctoral Degrees; *Doctoral Dissertations; *Doctoral Programs; *Graduate Study; Higher Education; Position Papers; Research Projects; Residence Requirements; Testing Programs

ABSTRACT

Requirements for the Doctor of Philosophy degree are listed and explained. The intent is to present the prospective Ph.D. student with a reasonably clear picture of the tasks to be completed, the level of performance to be achieved, and the expected schedule for completion of the degree. University faculty and academic administrative officers may compare doctoral requirements in their institutions with these standards, while the public may get some idea of the impressive credentials doctoral students carry. Typical requirements include: satisfactory performance on comprehensive examinations, foreign language and/or research tool competency examinations, a period of residency, completion of a dissertation and a time limit for the validity of work done and the completion of all work requirements. Within a rigorous course of doctoral study, the prospective Ph.D. student is also expected to be well informed of administrative organization, academic programs, prerequisites for admission, mastery-of-fields examinations, research qualifications, residency rules, training experience, and registration deadlines connected with completion of a doctoral degree. The culmination of doctoral study, the dissertation, should be a distinct contribution to knowledge and of sufficient value to warrant its publication in a reputable journal, or as a book or monograph. The following aspects of preparing the dissertation are discussed: nature and purpose, scope, selection of topic, advisory committee approval, off-campus research, format, joint authorship, classified research and final oral and/or written defense and review. (DC)

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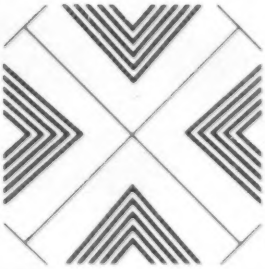

A POLICY STATEMENT

The Council of Graduate Schools in the United States

HE 012 756

Prepared by:
CGS PUBLICATIONS COMMITTEE

Jacob E. Cobb, Chairman
Indiana State University
Wendell H. Bragonier
Colorado State University
S. D. Shirley Spragg
University of Rochester
W. Dexter Whitehead
University of Virginia

FOREWORD

This statement, to which many individuals have contributed, is intended to describe the requirements which must be satisfied for the attainment of the Doctor of Philosophy degree.

This publication is intended to be useful not only to graduate deans, faculty members, present and prospective graduate students, presidents, and other academic administrative officers, but also to members of university governing boards, governmental and accreditation agencies and officials, private foundations, and those segments of the general public concerned with the requirements for the Doctor of Philosophy degree.

What is presented here is endorsed and published by the officers and Board of Directors of the Council of Graduate Schools in the United States.

Michael J. Pelczar, Jr.
President

I. Introduction

The Doctor of Philosophy degree is the highest academic degree granted by American universities. It is awarded to those who have demonstrated mastery of the field and successfully completed and defended a dissertation. The degree is a clear recognition that the student has the ability to complete a substantial piece of research work, to formally present the results of this work, and to appreciate its significance in the general field.

The degree has always been considered the most significant achievement in preparation for an active career in scholarship and research. The requirements set by American universities for the attainment of the Ph.D. degree may vary considerably among universities, but all have a common set of experiences and tasks designed to produce a scholar and a researcher with recognized competence in the chosen field. The successful candidate for the Ph.D. is then considered prepared to undertake a career of scholarship, of research, and of service to society.

In another publication of the Council of Graduate Schools *(The Doctor of Philosophy Degree)*, several aspects of the program leading to this degree have been described, such as its nature and purpose, institutional organization and facilities, faculty qualifications, and related matters. It is the purpose of this document to describe and comment upon the requirements that are commonly set for the Ph.D. degree by universities and by their academic departments. The intent is: (1) to present the prospective Ph.D. degree student with a reasonably clear picture of the tasks to be completed, the level of performance to be achieved, and the expected schedule for completion of the degree; (2) to focus the attention of university faculty and academic administrative officers on the existing requirements and their justification, to aid in their examination and, if appropriate their revision; and (3) to acquaint those interested members of the public with the concept of the Ph.D. degree and the achievements which are required to attain it.

II. Ph.D. Degree Requirements

1. Administrative Organization

Typically, the administration of Ph.D. degree programs is carried out at three distinctly different administrative levels: the graduate school, the department or program, and the faculty or dissertation adviser. The graduate school, with the concurrence of the faculty, establishes the broad requirements for the degree and the administrative format for the development of each individual program. Typical requirements include: satisfactory performance on certain examinations such as comprehensive examinations, foreign language and/or research tool competency examinations; a period of residence at the institution; the completion of a dissertation; and a time limit for the validity of work done and the completion of all degree requirements. The graduate school may or may not set course requirements for the degree. The graduate school generally establishes the form for program and dissertation advising. A committee structure is often specified which requires a program and/or dissertation advisory committee for each student —these may be the same or different committees. The structure of the committees is usually determined by the graduate school and often at least one member must be from outside the student's chosen field.

The department generally has its own particular organization and schedule for the Ph.D. degree program, and is primarily concerned with the academic program and with dissertation advising. In order to establish the academic competency of students, satisfactory performance in a specific number of courses may be required, which may include a set of core courses. On the other hand, academic competency may be established by passing the examinations. However, most departments require both the completion of the courses and satisfactory performance on the examinations before the students are considered *bona fide* candidates for the degree. Methods for choosing a dissertation adviser and dissertation topic vary markedly from discipline to discipline and from institution to institution. In some cases, the student begins work in a research program without a clear notion of what the dissertation topic will be, and it is only

arrived at after consultation with the research supervisor, and after some time has been spent in the actual research program. In other cases, the student may have a clear idea of the dissertation topic and will seek out a specific adviser to supervise the work. There is a wide variety of ways of selecting the research topic and the dissertation adviser.

The relationship between the student and the dissertation adviser also varies among disciplines. But no matter what the relationship, be it a constant association or occasional consultation, the dissertation adviser has the primary responsibility for assessing progress on the dissertation, and it may be only in the later stages of the project that others, such as the committee members and the second readers become vitally involved. (In some universities, early in the research program, a member of the committee may be designated as the second reader.) Once the dissertation project has been started, the decision as to the adequacy of the dissertation rests primarily with the dissertation adviser and the committee. The final judgment is made after the finished document has been submitted and the student has defended the work.

2. *Academic Program*

In almost all institutions in this country, it has been found that establishing the academic competency of students is best accomplished by requiring them to take a number of lecture and seminar courses. The students are assumed to be well-grounded through their undergraduate work, and because of the careful selection in admission much more is expected of students in graduate courses in terms of both academic and personal commitment. One of the most effective ways for faculty and students to participate effectively in this learning process is through seminars in which all of the participants play a role.

However, it must be impressed on all Ph.D. degree students that they are to acquire sufficient knowledge and expertise to permit them to work at the frontier of their field. The course work seminars are designed to help them do this. However, it will also be necessary for students to undertake a rather extensive program of independent study and research to acquire the mastery of the field. This mastery of the subject allows them to

approach the frontiers with a sound knowledge of the previous work and confidence in their ability to deal with typical problems in the field.

3. Prerequisites for Admission

Admission to the Ph.D. degree program is based on a variety of criteria established by the graduate school and by the graduate faculty of the department or segment of the university in which the program resides. This joint admission process tends to give some assurance of quality among programs at a given institution as well as quality within specific programs. Almost always the graduate school requirements set forth minimal standards to be met by all persons admitted to graduate study. The standards set by the department are specific for that department, and may be higher or more demanding than those of the graduate school. Normally, the graduate school requires that an applicant hold a baccalaureate degree from a regionally accredited institution, whose basic requirements are equivalent to those of the admitting institution, including adequate preparation in the chosen fields of study. In some cases, institutions will accept students whose academic credentials are deemed equivalent to the baccalaureate. The department into which the applicant is seeking admission will specify the minimal acceptable undergraduate preparation in the areas appropriate to the chosen field or fields of study, and, in many cases, the specific course content that must have been completed. Occasionally, circumstances may justify admission on the condition that certain undergraduate courses be taken to make up deficiencies. Graduate courses are considered to be more than mere extensions of undergraduate courses. It should be noted, also, that "appropriate areas" does not always mean completion of a "major" in the field or fields to be pursued at the doctoral level. Often specific preparation in related areas will be appropriate. (See also the discussion of "placement" tests under Section 4.)

In order to help determine the admissibility of the applicant, some graduate schools require satisfactory performance on such tests as the Aptitude Tests or the Advanced Tests of the Graduate Record Examinations, or both. More often, the requirement that such tests be taken and the acceptable level of performance are de-

termined by the department. The tests make possible a comparison of the individual applicant with the national norms as well as with current and past applicants to the program.

Since undergraduate grade point average has been shown to correlate positively with grades in first year graduate courses, many graduate schools require that the applicant's record show a minimal grade point average, e.g., 3.0 on a 4-point scale on all undergraduate work, or on all courses completed during the junior and senior years, or on courses in the "major" and related areas. Again, departments may require a higher undergraduate grade point average than the graduate school.

Almost all graduate schools and departments require that applicants submit letters of recommendation from teachers, employers, and others who can comment on the academic, professional, and personal potential for doctoral study. Work records and personal interviews are also often required.

For some departments and fields, there may be a considerably greater number of well-qualified candidates than there are places available. In such cases, the department is faced with the difficult task of selecting from many qualified applicants the most highly qualified and not admitting others.

"The Doctor of Philosophy degree is awarded by universities in many parts of the world as the mark of highest achievement in preparation for active scholarship and research." (Council of Graduate Schools, *The Doctor of Philosophy Degree*, p. 1.) Thus, it is reasonable to expect that aspirants for the degree will have demonstrated superior potential for completing the requirements for the degree with distinction. All of the prerequisites set for admission are intended to help graduate faculties and graduate deans determine the likelihood of success for the individual applicant. The graduate school staff and the graduate faculty are constantly trying to assess the motivation and dedication of individual applicants. While difficult to measure directly, clues to motivation and dedication to learning are often found in the more specific prerequisites. The search is for the applicant who will be successful not only in the completion of the

degree, but also in the pursuit of a life of active scholarship and research.

4. *Mastery-of-Fields Examinations*

Examinations are used extensively in doctoral programs to provide a reasonably satisfactory means of assessing level of mastery of fields of study. At most universities comprehensive (qualifying, preliminary, permission-to-proceed, candidacy) examinations (written or oral or both) are given after the student has completed appropriate courses and seminars and research tools examinations (see Section 5). Satisfactory performance on the comprehensive examinations indicates that, in the judgment of the faculty, the doctoral student has an adequate knowledge of the field and the specialty, knows how to use academic resources, and presumably will complete the dissertation. Because of the importance of these examinations most schools allow students a second attempt if they perform poorly on the first. Usually, it may be repeated only after a waiting period (a quarter, a semester, or a year) which allows the student time to take appropriate courses and otherwise prepare more adequately for the second examination.

Some institutions and departments administer an inventory or placement examination to students on admission to master's and/or doctoral programs to help determine the level of preparation of students for advanced study. Since courses bearing the same title may vary in content from institution to institution, the inventory examinations are designed to determine that the student is adequately prepared to undertake the advanced work.

5. *Research Tools Examinations*

In order to deal effectively with the material needed for pursuing research the student must develop a facility with certain research "tools" such as foreign languages, statistics, or computer science. Many universities offer courses specifically designed to prepare students in these areas. The institutions normally have research tools examinations to measure the proficiency of the students that are independent of the courses offered. These examinations may be prepared, administered, and scored by the appropriate university department. Additionally, standardized examinations, such as the foreign language

examinations (GSFLT) prepared and validated by Educational Testing Service, may be administered on specified dates throughout the year. Or, successful completion of examinations administered at the end of the special courses may satisfy the requirement. A satisfactory grade (e.g., B or above) in a regular foreign language, statistics, or computer science course of appropriate level may suffice.

Many universities require that graduate students demonstrate competence in the use of the English language. As an aid in determining adequate competence, universities often require satisfactory scores on standardized English tests, or on those developed within the institution. In general, students whose native language is not English or who have not attended an undergraduate institution where English was the medium of instruction must demonstrate mastery of English by submitting a satisfactory score on the Test of English as a Foreign Language (TOEFL), offered worldwide by Educational Testing Service or by other equivalent methods.

At one time, proficiency in one or more foreign languages was a universally accepted graduate school requirement. In recent times, the necessity for a foreign language requirement has been delegated to the departments which set their own requirement. At least three developments have contributed to this change: (1) Much of the significant research in many fields of study is now originally reported in English language journals. (2) Moreover, more adequate, and more prompt English language translations of foreign publications are readily available. (3) The graduate community has come to accept the point of view that the foreign language requirement is, in fact, more appropriately a prerogative of the individual department than of the graduate school.

6. Dissertation

a. Nature and Purpose

The doctoral dissertation is the final and most important component of the series of academic experiences which culminate in the awarding of the Ph.D. degree. Three major functions are fulfilled by the dissertation experience: (1) It is a work of original research or scholarship which makes a contribution to existing knowledge; (2) It is educational experience which demonstrates the

candidate's mastery of research methods and tools of the specialized field; and (3) It demonstrates the student's ability to address a major intellectual problem and arrive at a successful conclusion.

In view of the wide range of fields of knowledge in which the Ph.D. degree is awarded, it is not feasible to set specific requirements and standards for this degree. Nevertheless, there is a general—and usually explicitly stated—agreement among American universities that the doctoral dissertation should be a distinct contribution to knowledge, and of sufficient value to warrant its publication in a reputable journal, or as a book or monograph. In years past some universities required that the dissertation (or a substantial part) be published before the degree was officially awarded. Today that requirement has virtually disappeared; instead the common criterion has become the phrase "worthy of publication."

Although the role of the dissertation as an educational experience is usually not as clearly set forth as its role in developing new knowledge, it may be equally as important. A successful dissertation is a demonstration of the candidate's ability to use the tools and methods of research in the field, to organize the findings, and to report them in a mature, literate, and lucid fashion.

b. Scope of Project

The allowable scope of the dissertation project is also difficult to state precisely. The dissertation should clearly be a substantial and significant undertaking, yet not so extensive or open-ended that it cannot be successfully concluded in a reasonable period of time. The trend in recent years has been away from the long and comprehensive dissertation project, and in the direction of a more sharply delineated task requiring perhaps a year to a year and a half of full-time productive effort. The dissertation should be the introduction to a career of research and scholarship, not its apex!

c. Selection of Topic

The method of identifying a dissertation project or topic varies markedly both among and within disciplines but its final selection is by agreement between the candidate and the research adviser (or advisory committee). Frequently, the candidate submits a formal research proposal for the advice and suggestions of the adviser(s),

and for permission to proceed. When this procedure is followed it establishes a kind of contract—an agreement not only on the research topic, but also on its scope.

Probing the unknown often leads to unforeseen outcomes. The risks vary greatly however, from one research topic to another and the candidate should be encouraged by the research adviser(s) to avoid a "high-risk" dissertation topic. A careful assessment should be made of the risks and if they appear high the consequences of negative results must be clearly understood by the candidate and the adviser.

Some institutions require that the dissertation topic be approved by the candidate's department as well as by the advisory committee, and some require that the tentative (working) title of the dissertation be filed in advance in the graduate dean's office. If the research will involve human subjects as respondents, it will be necessary to obtain prior approval from the appropriate university committee on research involving human subjects, with respect to topic and procedures. Similarly, if the research involves animal subjects or has implications for such matters as safety and environmental impact, or other areas under governmental regulation, it must be reviewed by the appropriate university committee or board.

d. Advisory Committee

The doctoral candidate typically works closely with one faculty member—the research adviser. There is much to be said; however, for requiring that a dissertation advisory committee be appointed for each doctoral candidate, to advise on the dissertation research and to constitute the core of the final examining committee. If this procedure is followed, the committee is usually appointed by the head of the department, sometimes subject to the approval of the graduate dean. It should consist of at least three members, one of whom is the candidate's primary research adviser, and one of whom is outside the candidate's department but in a related field. The committee membership should be recorded in the student's files. Such a committee provides a means of exposing the candidates' ideas to a variety of viewpoints early in the planning. This may help avoid the development of an ill-advised research project and embarrassment, or worse, at the time of the final oral examination.

e. Off-Campus Research

Graduate schools require that the research activities connected with a dissertation be approved in advance and performed under the direct and continuing supervision of an appropriate member of the university faculty. Prior work, not so approved and supervised, is not acceptable for a doctoral dissertation.

There may be some situations in which off-campus dissertation research is justified, and the department and/or the graduate dean may give prior approval for it. A possible example is the student in engineering, who has an opportunity to carry out dissertation research in an industrial or governmental setting which provides opportunities (such as major research facilities) which the university department cannot furnish, yet conducts the research under the direct supervision of the university research adviser.

Another example is a student from a developing country who, if permitted to do dissertation research in the home country, might be able to make a distinct contribution to that country through the research. Supervision by the university research adviser is obviously difficult and in these circumstances it is mandatory that the university develop adequate procedures to guarantee proper oversight and supervision of the research. The university may require that such a student return to the campus to complete the writing of the dissertation, so that the library, the computer center, and the research adviser(s) are available. In any event, the key considerations are whether prior approval for topic and methods has been given, and whether adequate supervision can be given by the appropriate university research adviser(s).

f. Format

Over the course of the years universities have found that it is important that the dissertation have a well-defined format. In order for the dissertation to serve a variety of useful needs the final document must meet a number of criteria. Universities typically set forth, either in the graduate school catalog or in a special publication, the specific requirements for preparing the dissertation document, including typing or copying requirements, methods of citation, and related matters. Some institution will permit the offering of one or more published

articles (the research for which has met the requirements of the department and the graduate school) as part or all of a dissertation, or with the approval of the department and/or the graduate dean, the candidate may be permitted to submit the dissertation in the form of a manuscript (or manuscripts) to be submitted for publication in a scholarly journal. In those instances in which the submission of published articles or of manuscripts is permitted, it is often required that the candidate include introductory, transitional, and concluding sections, in order to achieve a more coherent and rounded piece of work. Also, the candidate may be required to include appendices which will provide more detailed materials on history, methods, and results than would ordinarily be presented in published journal articles. Some institutions explicitly state that, in addition to worthy content, the dissertation should be written in literate and lucid form, thus demonstrating the candidate's ability to communicate clearly and effectively.

g. Joint Authorship

Since the doctoral dissertation is, at least in part, a demonstration that the candidate has now reached a level of mastery of the field adequate for a career of scholarship and research, it is obvious that it should be the candidate's own work. Many universities explicitly state that the doctoral dissertation must be the work of a single author, i.e., joint or co-authored dissertations are not acceptable. Although there typically will have been much assistance from the research adviser, the candidate will be the sole author.

Some institutions, recognizing the frequency of collaborative and team efforts in present day research, specify conditions under which collaborative research may be acceptable for doctoral dissertations. In such cases it is usually required that a substantial part of the presented dissertation be the candidate's own work, and that it be stated clearly (in the preface or elsewhere) exactly what the candidate's contributions were. In those instances in which joint-authored journal articles or manuscripts are submitted as part (or all) of the dissertation, the candidate's own contributions should be a substantial part and it should be clearly indicated what they are.

h. Classified Research

Research which is "classified" by a government agency, or which is proprietary in nature, is widely held by universities not to be suitable for a doctoral dissertation. An essential aspect of dissertation research and scholarship is the free and full dissemination of research results; restrictions, either in the conduct of dissertation research or in the sharing of its results, are antithetical to that spirit.

i. Final Examination

There are a few universities in which the submitted doctoral dissertation is simply read by a committee appointed for the purpose, and this committee then files, either collectively or separately, its report(s) and recommendation(s) with the graduate dean. When approved by the graduate dean the candidate is recommended for the degree.

However, in the very large majority of universities a final oral examination is required. The nature and scope of this examination, the composition of the examining committee, and the rules of precedure may vary, but the examination typically concentrates on a defense of the dissertation and its relation to the specialized field in which it lies.

There are varying practices with respect to the composition of examining committees. The committee may consist of the candidate's advisory committee, it may be a committee named by the department head (typically with the approval of the graduate dean), or it may be appointed by the graduate dean (often with nominations from the department). The chairperson of the examining committee may be the graduate dean or a surrogate, the department head, or the dissertation adviser.

A minimum number of committee members is usually specified (at least four or five) with the requirement that all be of assistant professor rank or higher and possess the Ph.D. degree or the highest degree in their field of specialization (although the graduate dean may be empowered to make exceptions).

Some institutions require that all members of the examining committee be full time members of the uni-

versity's faculty. Some may permit, or even encourage, the appointment of one or more appropriate members from outside the university, with the approval of the graduate dean. Sometimes such outside members are required to be in addition to the stated minimum number of members.

Typically, the final examination is not permitted to be scheduled until the research adviser has read the dissertation and notifies the graduate dean that the dissertation is satisfactory and requests that the examination be scheduled. A minimum waiting time is usually specified in order that members of the committee have sufficient time to read the dissertation.

The examining committee is charged with the task of determining, through the reading of the dissertation and by the conduct of the examination, whether (1) the dissertation is satisfactory and (2) the candidate defended it successfully. With respect to the committee's voting, almost all universities require more than a simple majority to pass the candidate. Some specify that a single negative vote fails, some that two or more negative votes fail the candidate. If the candidate does fail the examination, a substantial waiting period (often three to six months) may be required before a re-examination may be scheduled. Typically, not more than one re-examination is permitted.

7. Residence

Requirements for the Doctor of Philosophy degree usually include an on-campus residence provision. There are several reasons for this: (1) students benefit from frequent contact with professional staff members in the student's specialized field; (2) fluency in the language of the specialization is enhanced by frequent and close association with other students in the same field; (3) competence in the field is promoted by frequent and detailed study of the literature of the specialization in the university's libraries; (4) valuable experience is gained by attending and participating in both formal and informal seminars, colloquia, and literature discussions; (5) benefits are derived from attending lectures and discussions led by specialists visiting from other campuses, laboratories, or governmental research organizations; (6) thesis or dissertation research is facilitated by frequent

consultation with the adviser. All of the foregoing require the students to be on campus for a period long enough to acquire those habits, attitudes, skills, and insights necessary for attaining the Ph.D.

Many students are employed during their study toward the doctorate as graduate assistants, instructors, research associates, or professional assistants, so provisions exist by which they can meet the stated residence requirement since their close association with the professional staff and other students fulfills the objectives of the requirement. Students employed full time off-campus encounter difficulty in meeting the requirement since they are physically removed from the campus environment and rarely are able to substitute their experiences for those on campus. At some institutions, however, each case is considered on its own merits and the requirements are regarded as flexible enough to allow for exceptional cases. The goals of the residence requirement are the important considerations, and may be achieved in a variety of ways. (For a discussion of non-resident degree programs, see the publication of the Council of Graduate Schools entitled *Non-Residential Graduate Degree Programs.*)

8. Training Experience

Many universities require all Ph.D. candidates to acquire some teaching experience at the college level under faculty supervision. More frequently, departments may have such a requirement. Usually it is satisfied by having the student teach one-quarter to one-half time for one quarter or semester. Similarly, certain departments, knowing career requirements in the field, may require one or more practicums, internships, or relevant work experiences.

9. Registration

Graduate students are usually required to register for courses and/or research each quarter or semester in which they are working toward their doctorates. This is necessary in order to document the full commitment of the university, in terms of staff and resources, to the student. Some require continuous registration from the time a student is admitted until the degree requirements are completed, whether the student is on campus or not. Thus students must register and pay tuition and fees for

all credits earned, during the course of acquiring the degree.

Registration for a minimum of three years of full-time study is frequently a degree requirement. Usually this includes a year for the master's degree or its equivalent and two years for the doctorate. Rarely does a student follow this schedule precisely because course scheduling does not permit it, the research for the dissertation often cannot be completed in so short a time, and the dissertation, itself, sometimes requires a year or more for writing. Usually a preliminary or comprehensive examination is taken after course work is completed and a final examination is taken on the research and dissertation. Time is required to prepare for both examination which may be written, or oral, or both.

Requirements for the Doctor of Philosophy degree vary considerably from discipline to discipline and from institution to institution across the United States. All, however, share a common goal; to develop those procedures and requirements which lead to the development of an educated person, competent in a specialization, able as a teacher, and willing to contribute significantly to the knowledge underlying the discipline and to the welfare of the society of which he or she is a part.